makergadgets

Professor Enclosure Manual

Contents

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⚠️ WARNING AND SAFETY INSRUCTIONS

To reduce the risk of fire or electric shock, do not expose this equipment to rain or moisture. Do not place objects filled with water such as a vase or the like, on top of or inside the apparatus.

The 3D-printer enclosure is not intended to be used as a stepping object or table; objects may be placed on top of the enclosure that amount to no more than a total of 10 lbs.

The preinstalled filtration system consists of a high-speed fan that is not intended to be obstructed by any objects other than the HEPA/Carbon filter attached and provided by Makergadgets. Any other type of filter or obstruction not provided by Makergadgets may reduce the life of the fan or destroy it altogether.

The fan is not blocked in any way other than the filter, so careful handling must be taken when changing filters. Enclosure must be unpowered and unplugged before removing filter.

As with any high-speed rotational object, fingers should be kept out of the fan when under operation or when enclosure is plugged in.

Interior parts are made from PLA and thus should not be exposed to temperature above $50^{o}C$ (122F). Testing was completed with 6-hour prints using ABS and PETG extruded at $240^{o}C$ (464F) and the enclosure maintained temperatures below $40^{o}C$ (104F).

Do not transport or move enclosure with Printer inside. First remove printer, then replace printer after enclosure in new work area.

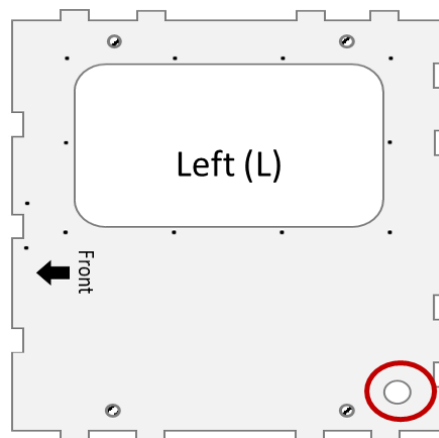# Operational Notes

1. For stability, the Enclosure should be place on a flat surface that covers the **WHOLE** foot print of the bottom panel
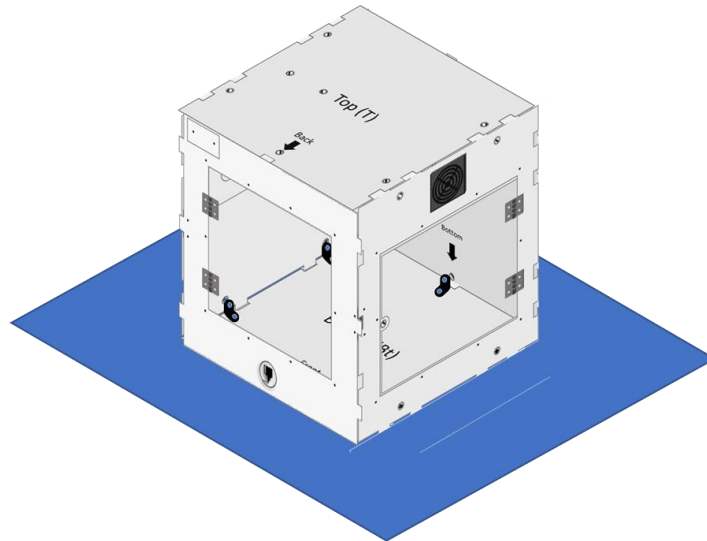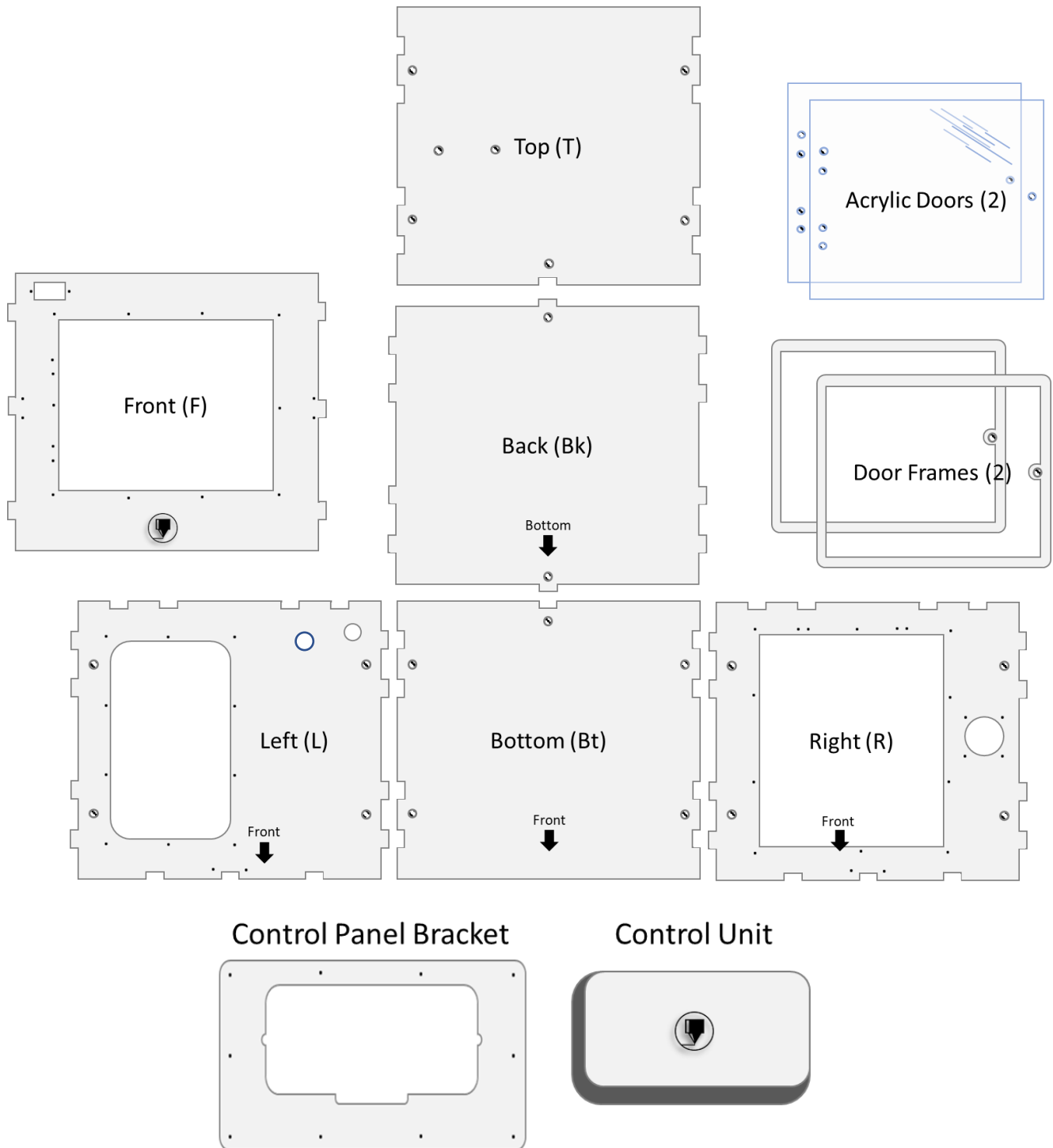

2. The LEFT Panel has a hole for the wires to be passed through. If you would like to have this hole closed, then you can print a valve closure. You can use free source designs such as this one on thingverse: https://www.thingiverse.com/thing:4914786
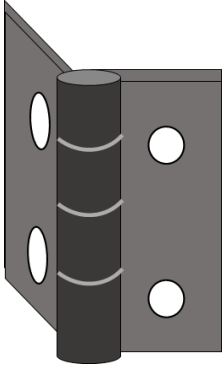
Parts List

1. Panels

Top (T)

Acrylic Doors (2)

Front (F)

Back (Bk)

Bottom

Door Frames (2)

Left (L)

Bottom (Bt)

Right (R)

Front

Front

Front

Control Panel Bracket

Control Unit

2. Hardware

Hinges
4 x

Door Knobs
2x

Nuts (3mm)
64 x

10mm Bolts 40 x

15 mm Bolts 12 x

8 mm (Counter Sunk) Bolts 12 x

10 mm THICK Bolts
20 x

THICK Nuts (5mm)
20 x

ULTRA Magnets
2 x

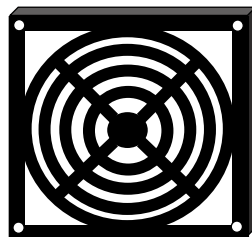**Metal Magnet Catch**
2 x

Steel Brackets
10x
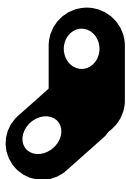
Dust Filter Frame

Dust Filter
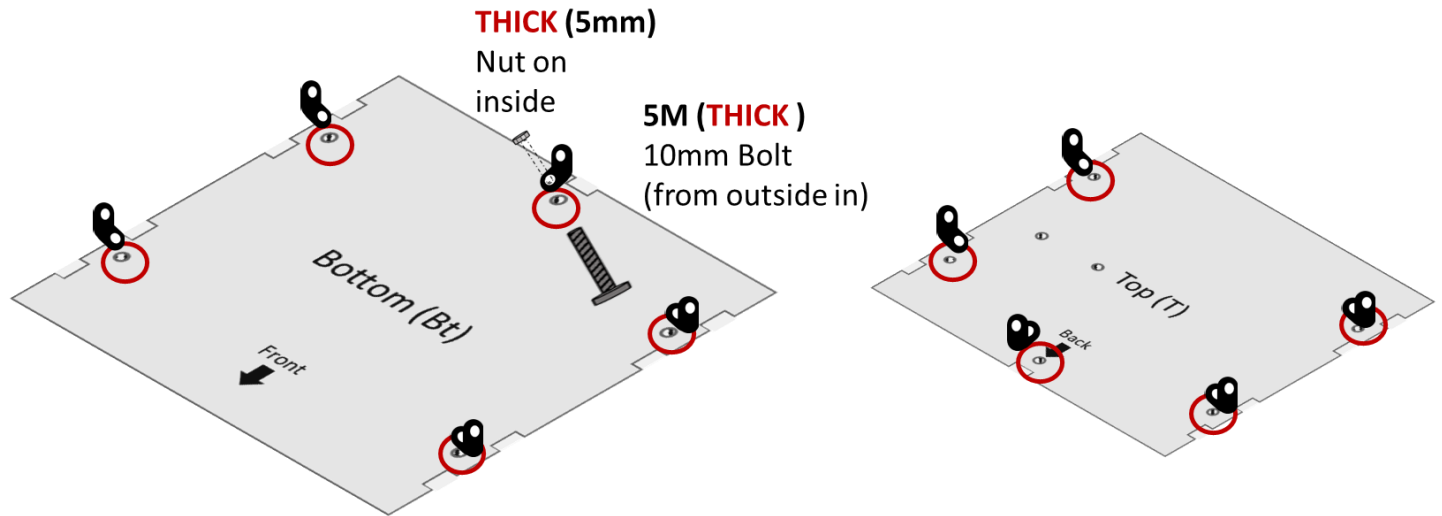
3. Electrical Parts

LED Light

Control Panel Power Cable

Assembly Instructions

1. Attach Steel Brackets to Top and Bottom Panels

THICK (5mm)
Nut on inside

5M (THICK)
10mm Bolt
(from outside in)

Bottom (Bt)

Front

Top (T)

Back

2. Attach LED Light to Top Panel

Top (T)

Back

Slide ends out as needed

10mm

**10mm Bolts
(Outside In)**

Back
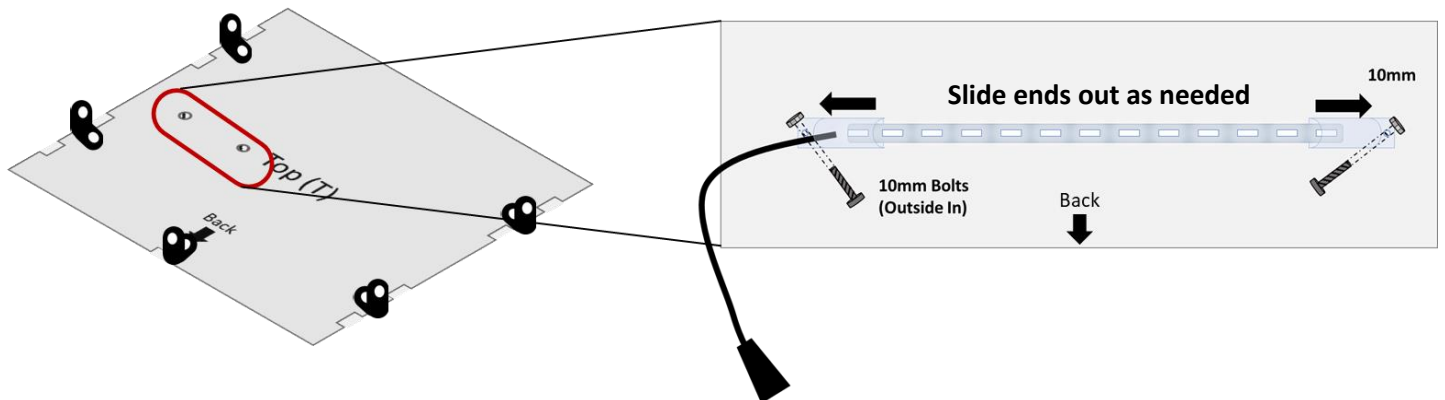
3. Right Panel Assembly: Attach Magnet to Door Frame

10mm Bolt
(from Outside In)

Right Panel
Assembly
Inside View
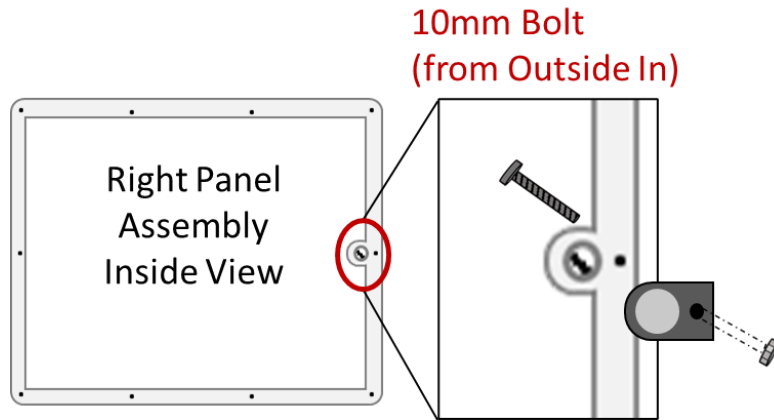
4. Right Panel Assembly: Attach Door Frame to Interior of Right Panel

Right (R)
(Inside View)

10mm Bolt
(from Outside In)

3 Notches
in Front

Front

Nut on Inside

5. Right Panel Assembly: Attach ULTRA Magnet

Right (R)
(Inside View)

15mm Bolt
(from Outside In)

Front

Magnetic Side
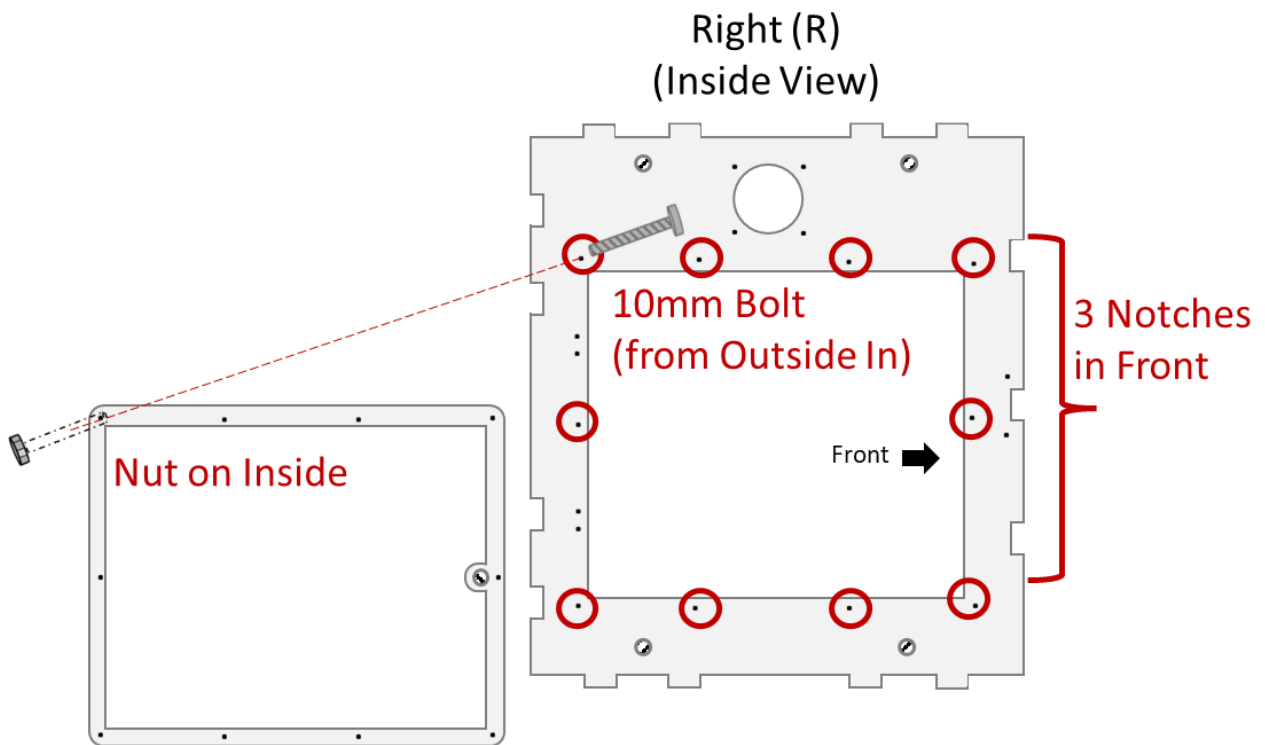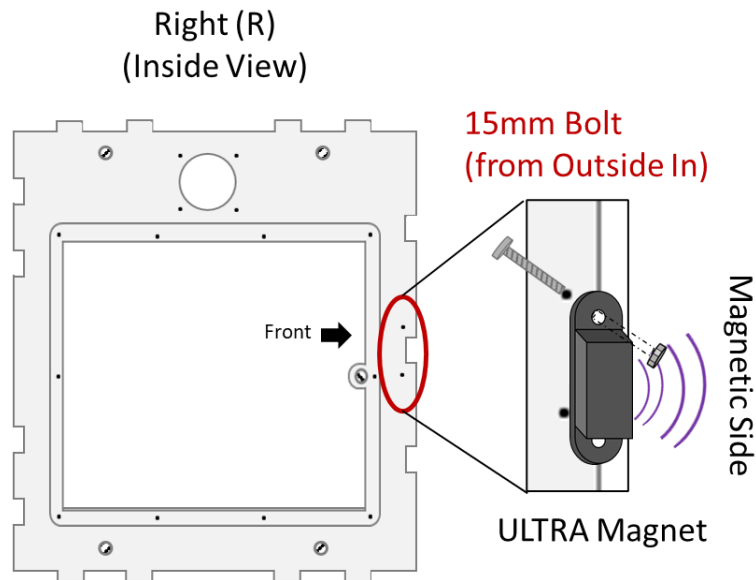
ULTRA Magnet

6. Right Panel Assembly: Attach Hinges

Right (R)
(Outside View)
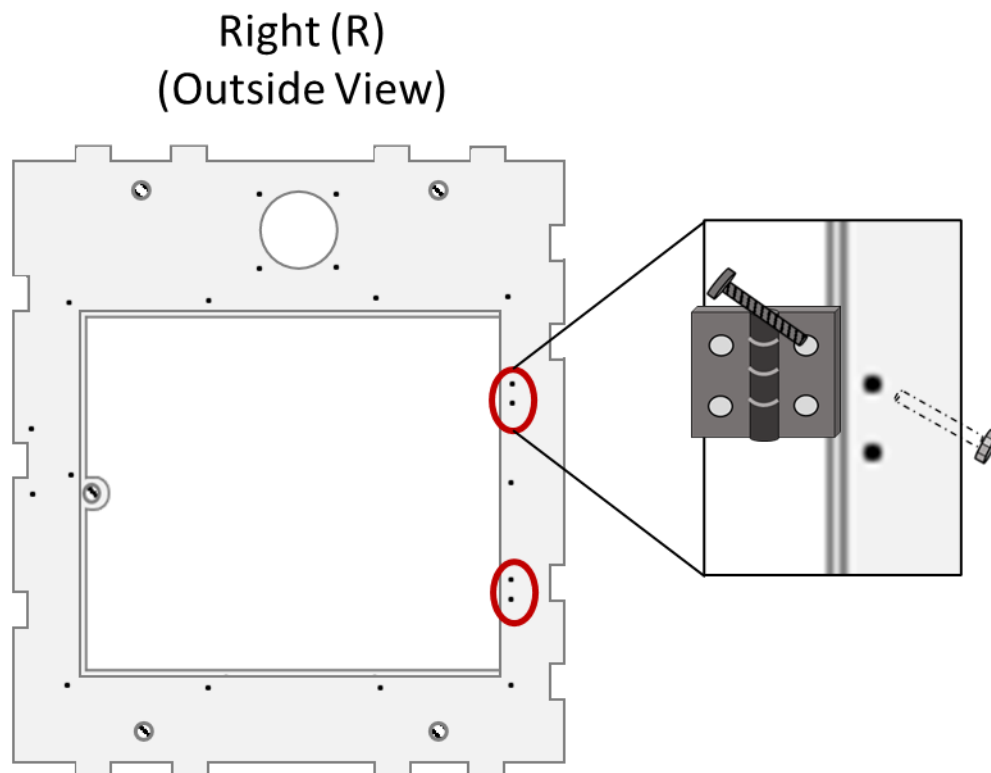
7. Right Panel Assembly: Attach Dust Filter Frame and Filter

Right (R)
(Outside View)

10mm Bolt
(from Outside In)

Front

Dust Filter

Right (R)
(Outside View)

Snap On Dust Filter

8. Left Panel Assembly: Attach Ultra Magnets

Left (L)
(Inside View)

15mm Bolt
(from Outside In)

Magnetic Side

4 Notches
in **Back**
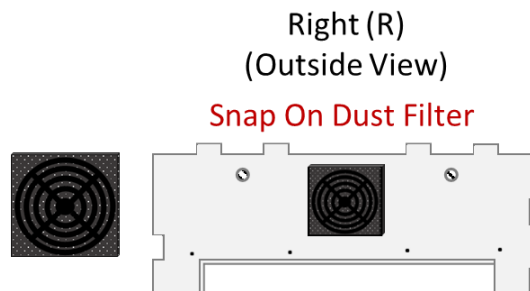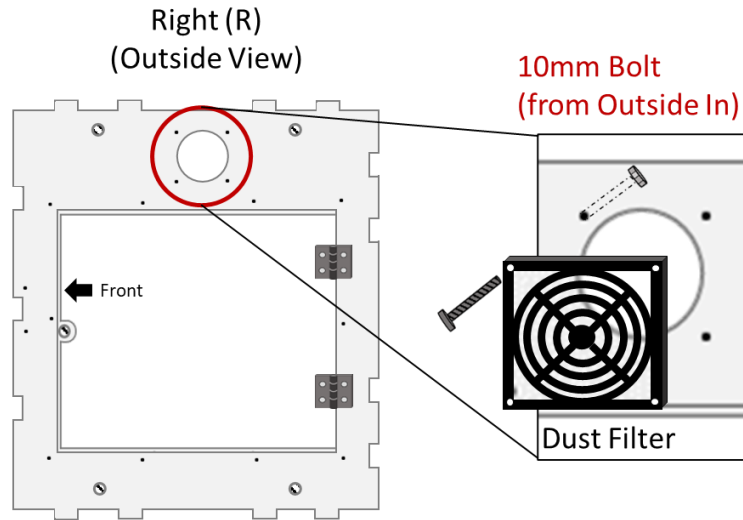
Front

ULTRA Magnet
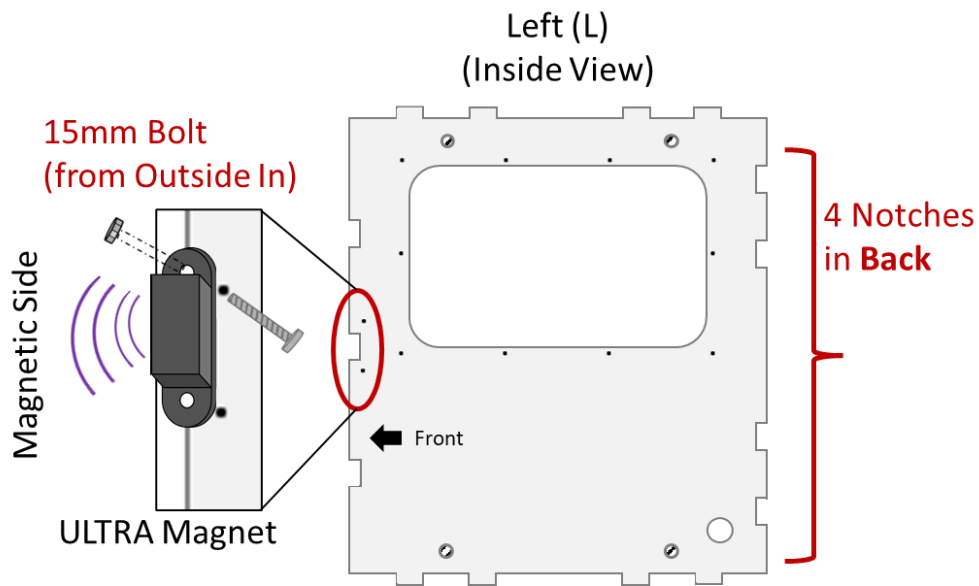
9. Left Panel Assembly: Attach Control Unit and Frame

10mm Bolt (from Outside In)

Control Panel Bracket

Control Unit

Left (L)
(Outside View)

Control Panel Bracket + Unit

10mm Bolt (from Outside In)
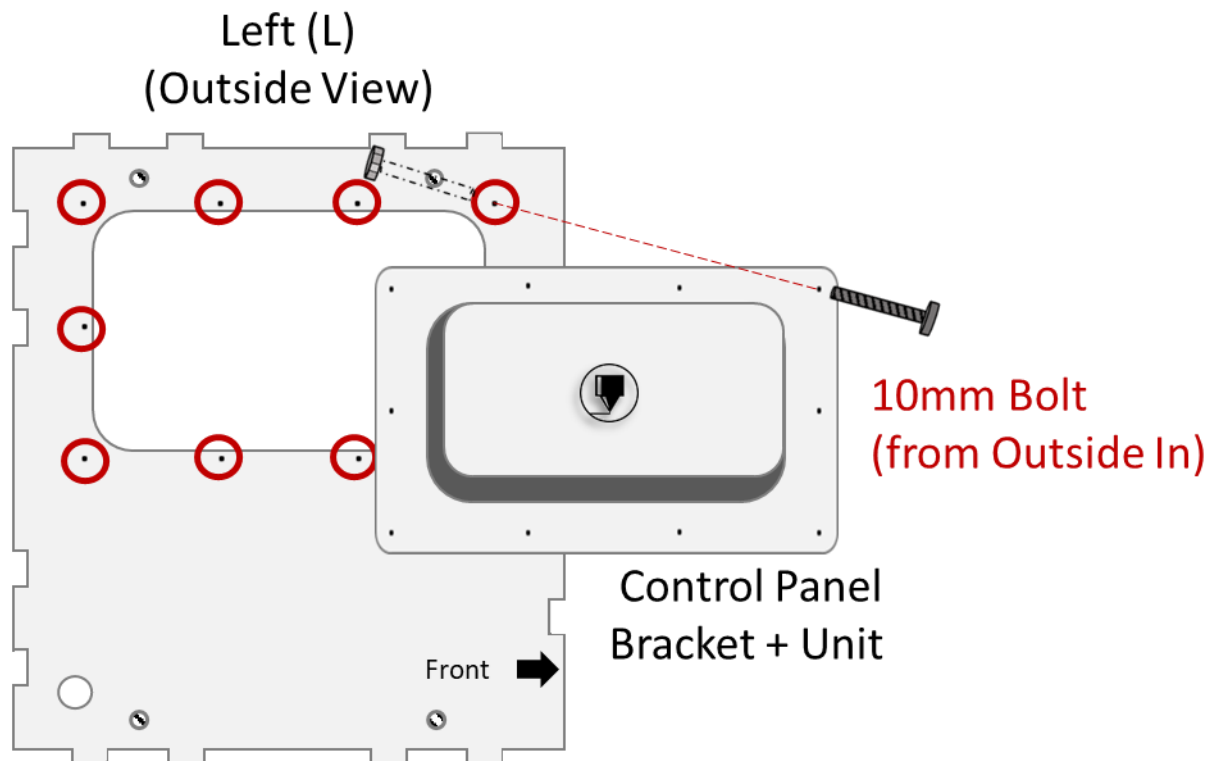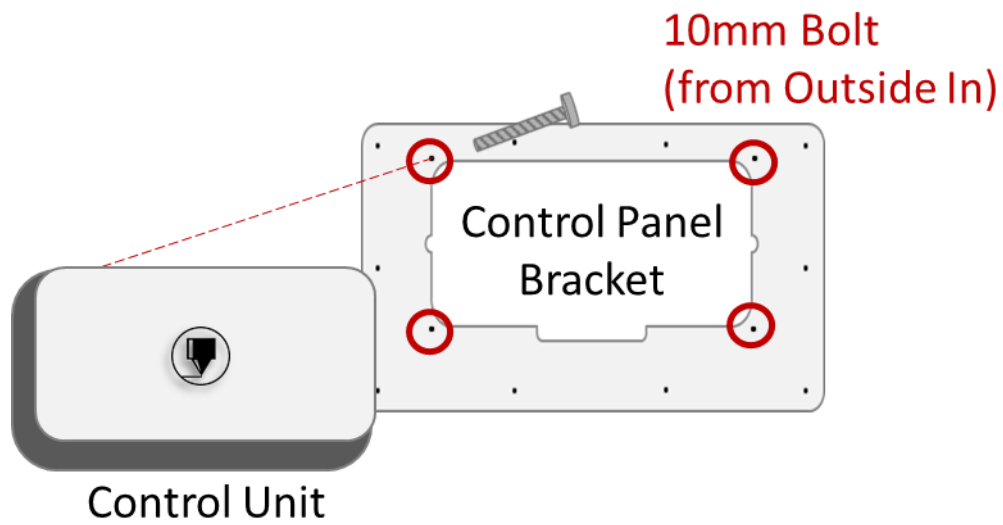
Front ➡

10. Front Door Assembly: Door Panel Frame

10mm Bolt
(from Outside In)

Door Magnet

Front Panel
Assembly
Inside View

Front (F)
(Inside View)

10mm Bolt
(from Outside In)

Nut on Inside
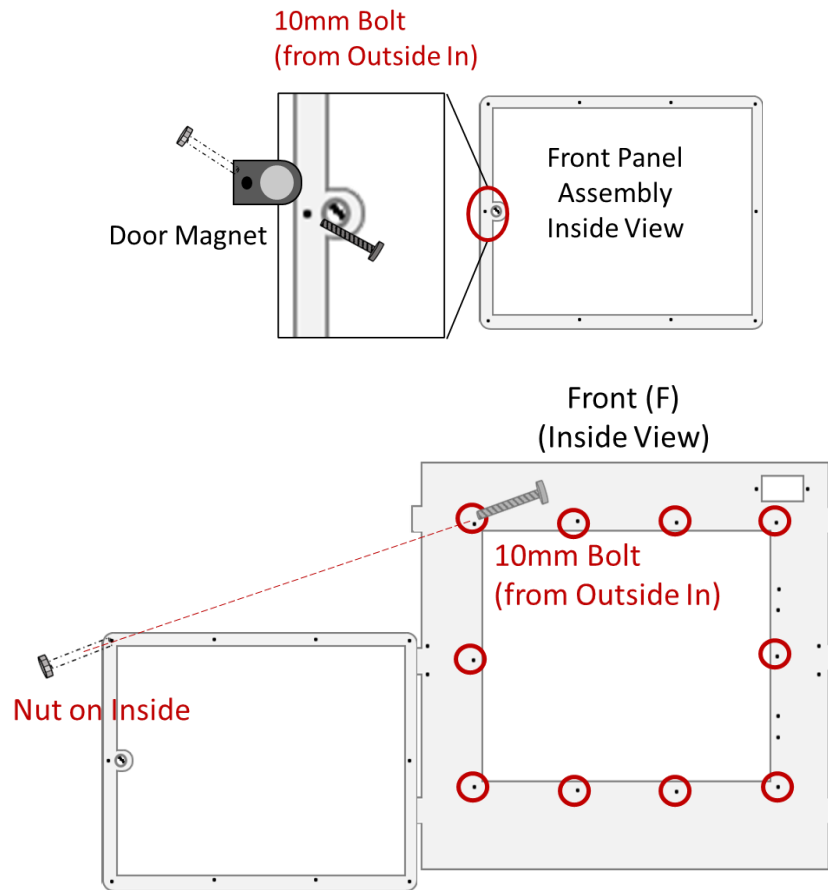
11. Front Door Assembly: Attach Metal Magnet Catches

Front (F)
(Inside View)

8mm Counter
Sunk Bolt
(from Outside In)

Metal Magnet
Catch
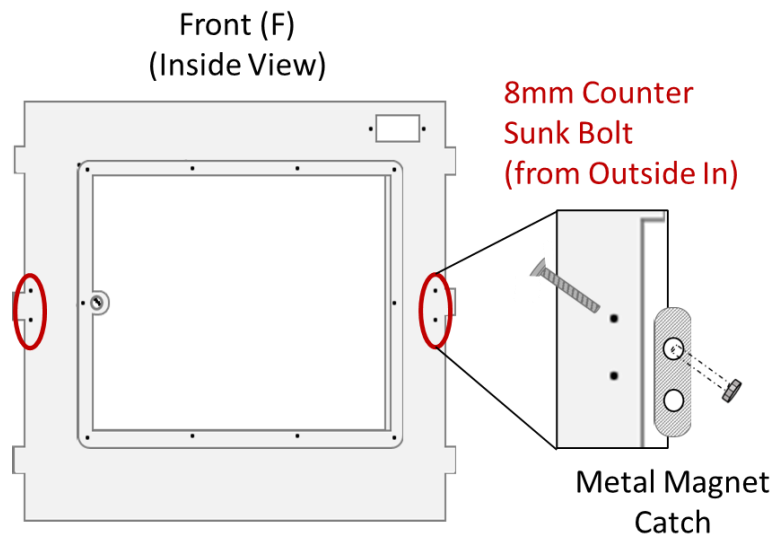
12. Front Door Assembly: Attach Hinges and Future Expansion Port Cover

15mm FLAT Headed Bolt
(from Outside In)

Front (F)
(Outside View)

10mm Bolt
(from Outside In)

Front (F)
(Outside View)

Port
Cover
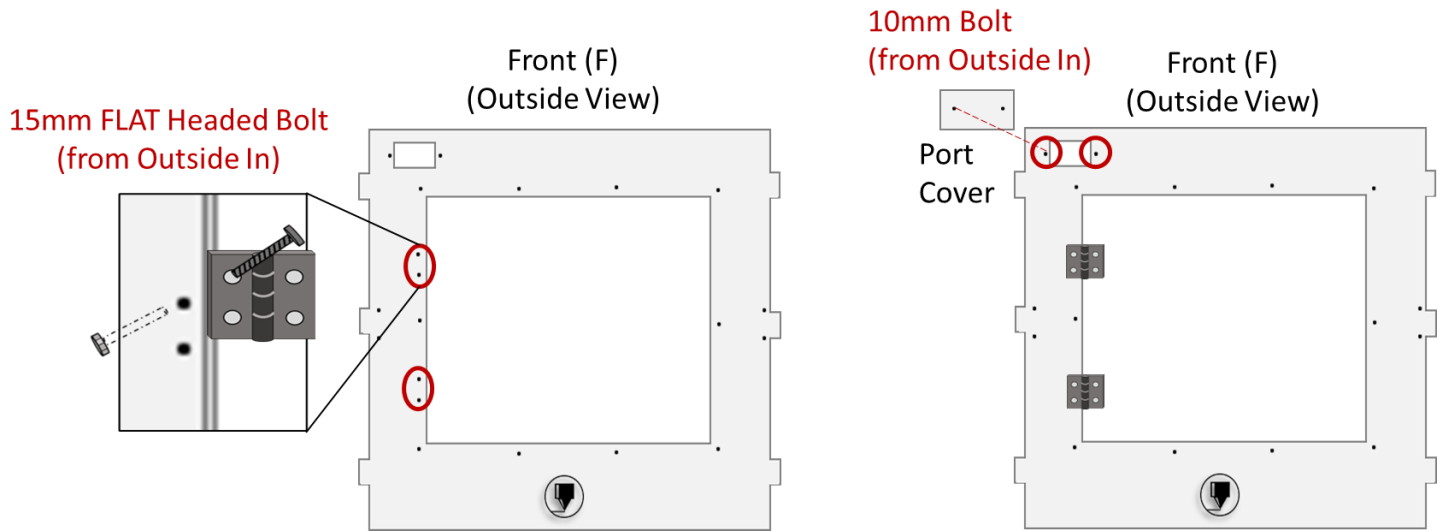
13. Enclosure Assembly (Use THICK Bolts)

Attach Right Panel to Bottom

Bottom (at)

Front

THICK (5mm)
Nut on
inside

5M (THICK)
10mm Bolt
(from outside in)
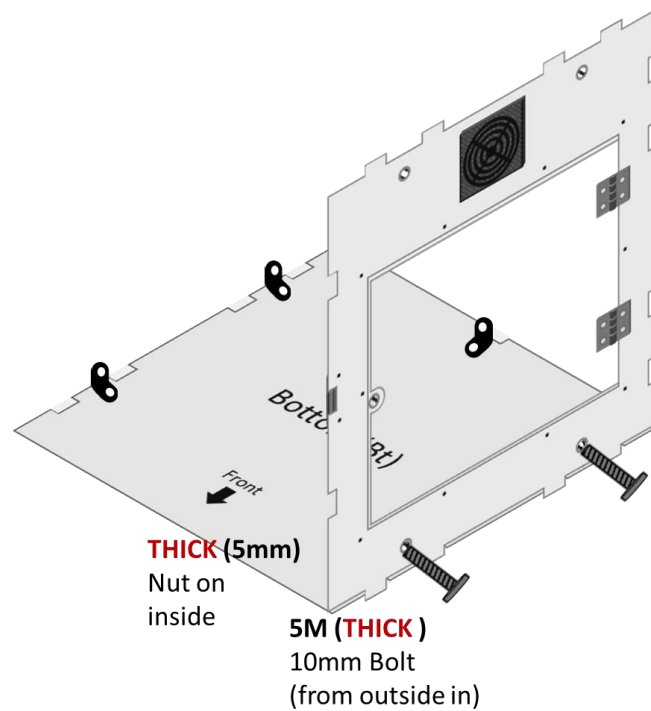
Attach Left Panel to Bottom

THICK (5mm)
Nut on
inside

5M (THICK)
10mm Bolt
(from outside in)

Front

Bott... ...at)

Attach Back to Bottom

5M (THICK)
10mm Bolt
(from outside in)

THICK (5mm)
Nut on
inside

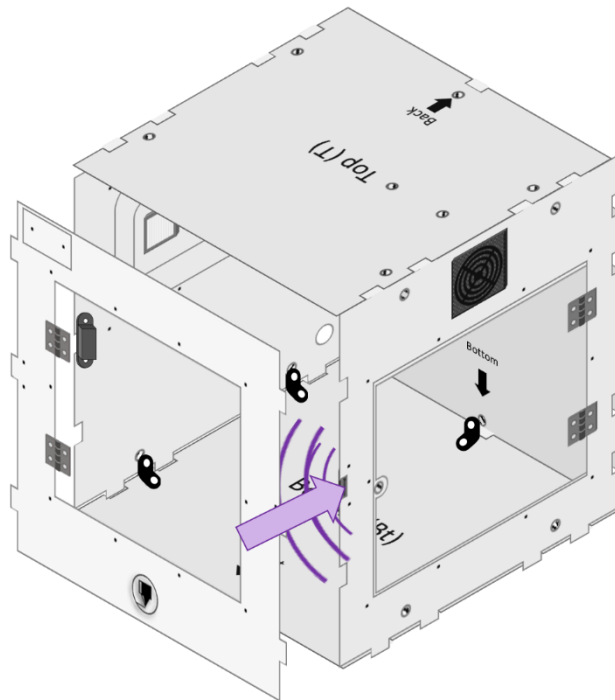Bottom

Bott... ...at)
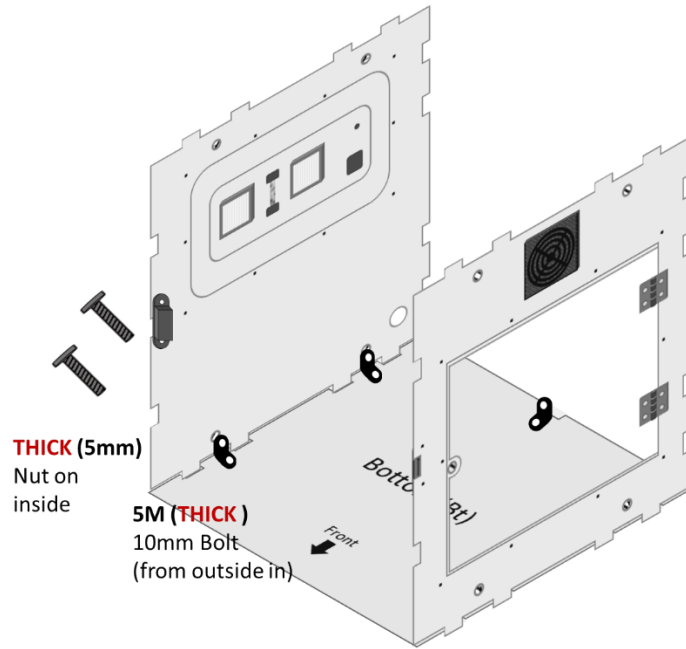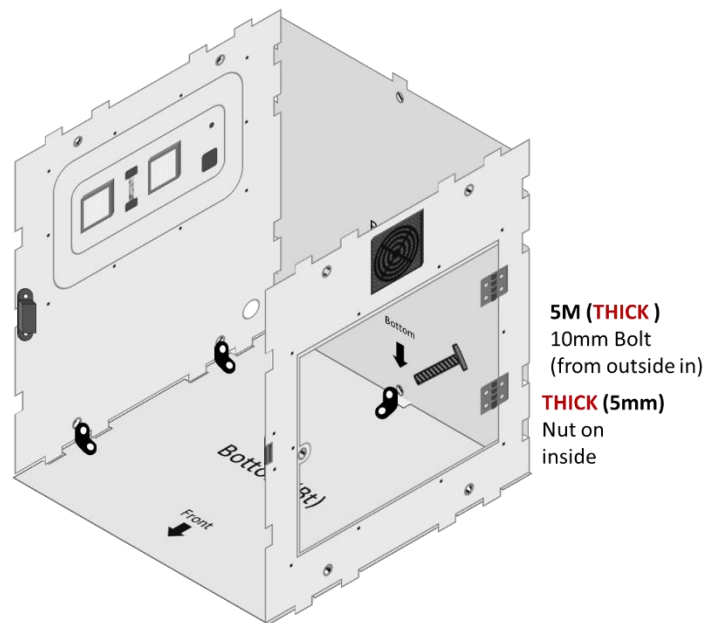
Front

Attach Top
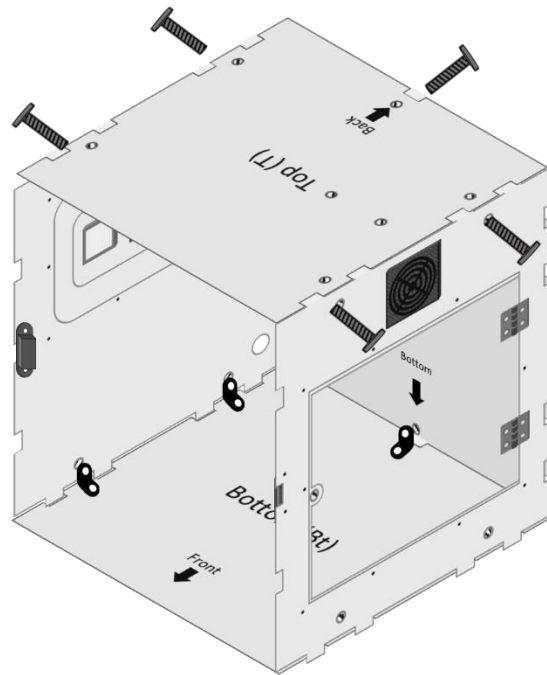
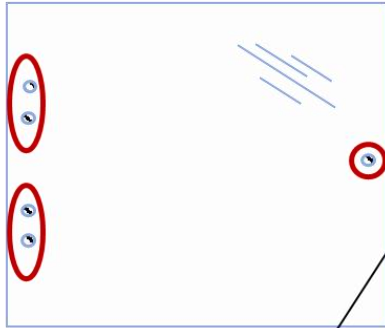**5M (THICK)**
10mm Bolt
(from outside in)

THICK (5mm)
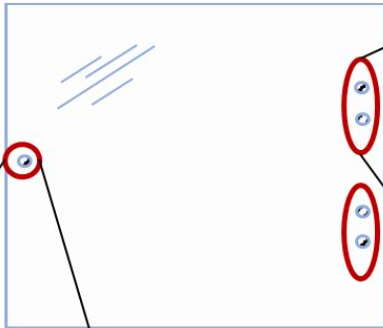Nut on
inside

Use Magnetic Close to Attach Front Door
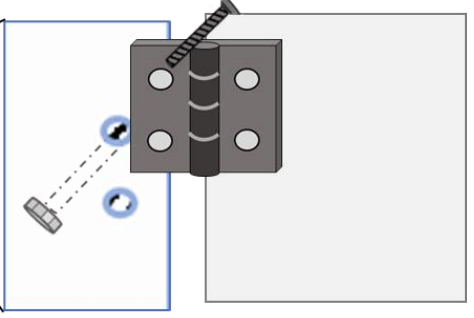
14. Attach Acrylic Doors
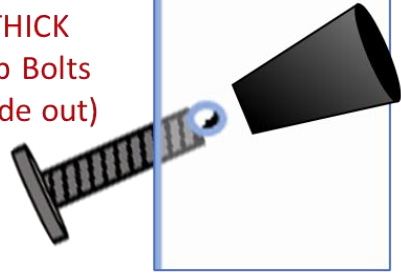
Front Acrylic Door
(Outside View)

Right Panel Acrylic Door
(Outside View)

8mm Countersunk
Bolts (From Outside in)
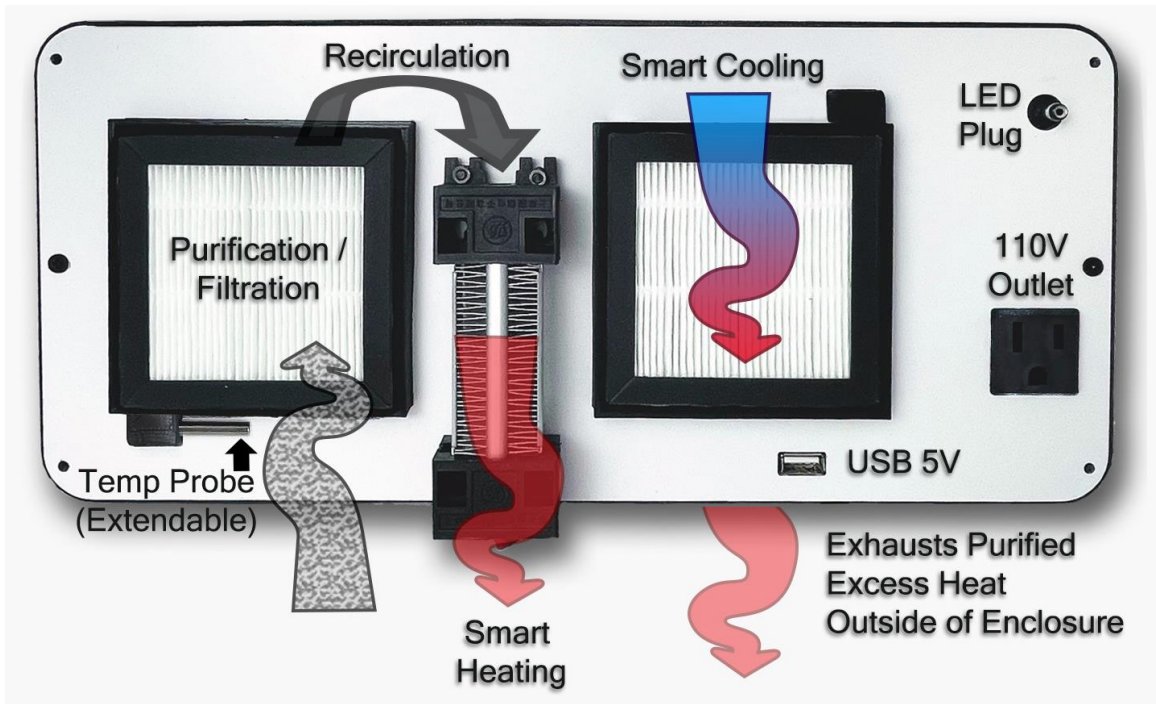
Door Knob

SUPER THICK
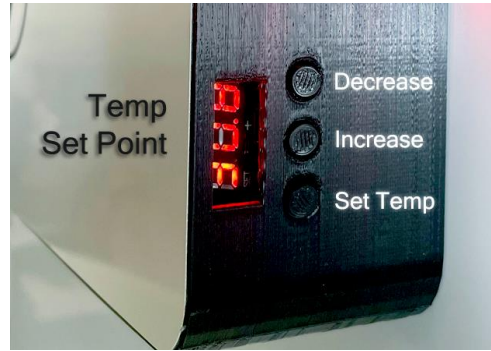Door Knob Bolts
(From Inside out)

15. Connect Power Cords

Outside Panel:

Inside Panel:

Smart Temp Control User Guide – Setting Temperature Control

Temp Set Point Screen	By default, the screen shows the **current** temperature from the probe in Celsius
Set Temp Button	Press this button and the **Temp Set Point Screen** will blink. This will Allow you to set the temperature that will trigger the smart cooling exhaust system. Set the desired trigger temperature by using the **Increase Button** and **Decrease Button**. **Do not exceed 37ºC** as this can lead to damage of your equipment and softness of the control panel components. **Recommended Temp for ABS Printing is 35°C** – and higher quality filaments require hotter **BED Temperature** – not environmental temperature. Ideal environmental temp for even Nylon printing is ~37°C. Consider using a heated bed for Nylon printing.
SMART Temp Control System	The SMART Temp Control **Heating** will trigger until the enclosure reaches within 2^{O}C of the setpoint. Then printing will continue to generate heat, and the SMART Temp Control **Cooling Exhaust** will trigger once the temperature reaches 2^{O}C above the setpoint and will turn off one the temperature reaches 2^{O}C belove the setpoint.